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TITLE: Herbicidal compositions with acylated aminophenylsulfonylureas

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INVENTOR-INFORMATION:

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US-CL-CURRENT: 504/133; 504/128, 504/134, 504/136

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Brief Summary Text (22):

The active substances (A) are suitable, if appropriate in the presence of safeners, for controlling harmful plants in a number of plant crops, for example in economically important crops such as cereals (e.g. wheat, barley, rye, oats, rice, corn, millet), sugarbeet, sugar cane, rapeseed, cotton and soybeans. Of particular interest here is use in cereals such as wheat and corn, in particular corn. For the combinations (A)+(B), these crops are likewise preferred. For the combinations (A)+(B3), mutant crops tolerant to the herbicides (B3) or tolerant transgenic crops are especially of particular interest, preferably corn and soybeans, in particular corn which is resistant to glufosinate or glyphosate, or soybean crops which are resistant to imidazolinones.

Brief Summary Paragraph Table (14):

(B2.4.1) halosulfuron (PM, pp. 657-659), 3-chloro-5-(4,6-dimethoxypyrimidin-2-ylcarbamoylsulfamoyl)-1-methylpyrazole-4-carboxylic acid and its esters and salts, preferably the methyl ester, (B2.4.2) thifensulfuron and its esters, preferably the methyl ester (PM, pp. 1188-1190), 3-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]carbonyl]amino]sulfonyl]-2-thiophenecarboxylic acid or methyl ester and its salts, (B2.4.3) prosulfuron and its salts (PM, pp. 1041-1043), 1-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-3-[2-(3,3,3-trifluoropropyl)phenylsulfonyl]urea and its salts, (B2.4.4) iodosulfuron (proposed common name) and preferably esters such as the methyl ester and their salts (cf. WO 96/41537 to which reference is hereby expressly made), 4-iodo-2-(4-methoxy-6-methyl-1,3,5-triazin-2-ylcarbamoylsulfamoyl)benzoic acid or methyl ester and its salts such as the sodium salt, disclosed in WO-A-92/13845, to which reference is hereby expressly made, (B2.4.5) tritosulfuron and its salts (AG Chem, New Compound Review (publ. Agranova), Vol. 17, 1999, pp. 24), N-[[[4'-methoxy(trifluoromethyl)-1,3,5-triazin-2-yl]amino]carbonyl]-2-trifluoromethylbenzenesulfonamide) (B2.4.6) sulfosulfuron and its salts (PM, pp. 1130-1131), 1-(4,6-dimethoxypyrimidin-2-yl)-3-(2-ethylsulfonylimidazo[1,2-al]pyridin-3-yl)sulfonylurea b) herbicides which are selective in rice, for example (B2.5) from the group having different structural types, such as

Brief Summary Paragraph Table (17):

(B3.1.1) glufosinate-ammonium, the monoammonium salt of the acid form, (B3.2) glyphosate (PM, pp. 646-649), N-(phosphonomethyl)glycine and its salts and esters, for example

Brief Summary Paragraph Table (18):

(B3.2.1) glyphosate-isopropylammonium (B3.3) imidazolinones and their salts such as

Detailed Description Paragraph Table (12):

TABLE 12 Herbicidal action and selectivity in corn Active Dose.sup.1) Herbicidal action.sup.2) (%) Damage.sup.2) substance(s) g of A.S./ha ECHCG POLCO (%) on corn (A1.1) 120 65 30 10 60 35 30 10 30 5 25 10 15 0 5 10 (B3.2.1) 1000 98 82 -- 500 83 78 250 73 55 (A1.1) + 30 + 500 100 (5 + 83) 93 (E = 84) -- (B3.2.1) 30 + 250 100 (5 + 73) 83 (25 + 55) 15 + 250 100 (0 + 73) 78 (5 + 55) (B1.3.3) 40 5 68 15 20 3 63 0

10 0 60 0 (A1.1) + 30 + 20 55 (5 + 3) 90 (25 + 63) 0 (B1.3.3) 15 + 20 50 (0 + 3) 80
(5 + 63) 0 30 + 10 45 (5 + 0) 88 (25 + 60) 5 (B1.2.5) 200 89 80 25 100 75 65 20 50 5
45 15 (A1.1) + 30 + 100 92 (5 + 75) 93 (25 + 65) 0 (B1.2.5) 15 + 100 95 (0 + 75) 90
(5 + 65) 0 30 + 50 83 (5 + 5) 75 (25 + 45) 0 Abbreviations for Table 12: .sup.1) =
Scoring 3 weeks after application .sup.2) =application in each case post-emergence g
of A.S./ha = Grams of active substance (= 100% active substance) per hectare (A1.1)
= see Table 2 (B3.2.1) = Glyphosate-isopropylammonium (B1.3.3) = Primisulfuron
(B1.2.5) = Metribuzin ECHCG = Echinochloa crus-galli POLCO = Polygonum convolvulus

Current US Cross Reference Classification (1):504/128

CLAIMS:

1. A synergistic herbicide combination having a synergistic effective amount of components (A) and (B), where (A) is one or more herbicides selected from the group consisting of the formula (I) and their salts ##STR6## in which R.sup.1 is hydrogen or (C.sub.1 -C.sub.4)alkyl, R.sup.2 is hydrogen or (C.sub.1 -C.sub.4)alkyl, R.sup.3 is H, (C.sub.1 -C.sub.4)alkyl, (C.sub.1 -C.sub.4)alkoxy, (C.sub.2 -C.sub.4)alkenoxy, (C.sub.2 -C.sub.4)alkynoxy, (C.sub.3 -C.sub.6)cycloalkyl, each of the 5 last-mentioned radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, cyano, (C.sub.1 -C.sub.4)alkoxy and (C.sub.1 -C.sub.4)alkylsulfonyl, one of the radicals X and Y is halogen, (C.sub.1 -C.sub.4)alkyl, (C.sub.1 -C.sub.4)alkoxy, (C.sub.1 -C.sub.4)alkylthio, where each of the three last-mentioned radicals is unsubstituted or substituted by one or more radicals from the group consisting of halogen, (C.sub.1 -C.sub.4)alkyl, (C.sub.1 -C.sub.4)alkoxy, (C.sub.1 -C.sub.4)alkylthio, and the other of the radicals X and Y is (C.sub.1 -C.sub.4)alkyl, (C.sub.1 -C.sub.4)alkoxy or (C.sub.1 -C.sub.4)alkylthio, where each of the three last-mentioned radicals is unsubstituted or substituted by one or more radicals from the group consisting of halogen, (C.sub.1 -C.sub.4)alkoxy and (C.sub.1 -C.sub.4)alkylthio, Z is CH, and (B) one or more herbicides from the group consisting of alachlor, metolachlor, acetochlor, dimethenamid, pethoxamid, atrazine, simazine, syanazine, terbutylazine, metribuzin, isoxaflutole, fluthiamide, terbutryn, nicosulfuron, rimsulfuron, primisulfuron, pendimethalin, sulcotrione, dicamba, mesotrione, linuron, isoxachlortole, benoxacor, metosulam, flumetsulam, cloransulam, florasulam, molinate, thiobencarb, quinchlorac, propanil, pyribenzoxim, butachlor, pretilachlor, clomazone, oxadiargyl, oxaziclofene, anilofos, cafenstrole, mefenacet, fentrazamid, thiazopyr, triclopyr, oxadiazone, esprocarb, pyributicarb, azimsulfuron, thenylchlor, pentozazone, pyriminobac, quinalofop/quinalofop-P, fenoxacrop/fenoxyacrop-P, fluazifop/fluazifop-P, haloxyfop/haloxyfop-P, propaquizafop, clodinafop, cyhalofop, sethoxydim, cycloxydim, clethodim, clefoxicidim, isoproturon, chlortuluron, prosulfocarb, isopropyl 5-(4-bromo-1-methyl-5-(trifluoromethyl)-1H-pyrazol-3-yl)-2-chloro-4-fluoro benzoate, diclofop/diclofop-P, imazamethabenz, triasulfuron, flupyrsulfuron, a compound of the formula (III) or its salts, ##STR7## in which R.sup.1 is CO--Q--R.sup.8, R.sup.2 and R.sup.3 independently of one another are H or (C.sub.1 -C.sub.4)alkyl, R.sup.4 is H, (C.sub.1 -C.sub.8) alkyl which is unsubstituted or is substituted by one or more radicals from the group consisting of halogen, (C.sub.1 -C.sub.4)alkoxy, (C.sub.1 -C.sub.4)alkylthio, (C.sub.1 -C.sub.4)alkylsulfinyl, (C.sub.1 -C.sub.4)alkylsulfonyl, ((C.sub.1 -C.sub.4)alkoxy)carbonyl and CN, or is (C.sub.3 -C.sub.6)alkenyl which is unsubstituted or is substituted by one or more halogen atoms, or is hydroxyl, (C.sub.1 -C.sub.4)alkoxy, ((C.sub.1 -C.sub.4)alkyl)carbonyl or (C.sub.1 -C.sub.4)alkylsulfonyl, each of the three latter radicals being unsubstituted or substituted in the alkyl moiety by one or more halogen atoms or by (C.sub.1 -C.sub.4)alkoxy or (C.sub.1 -C.sub.4)alkylthio, or is phenylsulfonyl in which the phenyl radical is unsubstituted or substituted, and R.sup.5 is (C.sub.1 -C.sub.4)alkylsulfonyl or (C.sub.3 -C.sub.6)alkenylsulfonyl, each of the two latter radical being unsubstituted or substituted by one or more halogen atoms or by (C.sub.1 -C.sub.4)alkoxy or (C.sub.1 -C.sub.4)alkylthio, or is phenylsulfonyl or phenylcarbonyl, the phenyl radical in each of the two latter radicals being unsubstituted or substituted, or is mono- or di-((C.sub.1 -C.sub.4)alkyl)aminosulfonyl or ((C.sub.1 -C.sub.6)alkyl)carbonyl, each of the three latter radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, (C.sub.1 -C.sub.4)alkoxy, (C.sub.1 -C.sub.4)alkoxy, (C.sub.1 -C.sub.4)alkylthio, (C.sub.1 -C.sub.4)alkylsulfinyl, (C.sub.1 -C.sub.4)alkylsulfonyl,

alkylsulfonyl, ((C.sub.1 -C.sub.4)alkyl)carbonyl, ((C.sub.1 -C.sub.4)alkoxy)carbonyl and CN, or is formyl, a group of the formula --CO--CO--R' in which R'=H, OH, (C.sub.1 -C.sub.4)alkoxy or (C.sub.1 -C.sub.4) alkyl, or is ((C.sub.3 -C.sub.6)Cycloalkyl)carbonyl, ((C.sub.2 -C.sub.6)alkenyl)carbonyl or ((C.sub.2 -C.sub.6)alkynyl)carbonyl, each of the three latter radicals being unsubstituted or substituted by one or more halogen atoms, or is a group of the formula ##STR8## or R.sup.4 and R.sup.5 together are a chain of the formula (--CH.sub.2).sub.m B-- or --B.sup.1 --(CH.sub.2).sub.m1 --B--, the chain being unsubstituted or substituted by one or more (C.sub.1 -C.sub.3) alkyl radicals and m being 3 or 4 or m.sup.1 being 2 or 3, and W is an oxygen or sulfur atom (i.e. O or S); B and B.sup.1 independently of one another are SO.sub.2 or CO; Q is O, S or --NR.sup.13 --, T is O or S, R.sup.6 is H, (C.sub.1 -C.sub.4)alkyl, (C.sub.1 -C.sub.4)alkoxy, ((C.sub.1 -C.sub.4)alkyl)carbonyl or ((C.sub.1 -C.sub.4) alkoxy)carbonyl, each of the 4 latter radicals being unsubstituted or substituted in the alkyl moiety by one or more halogen atoms, or is halogen, NO.sub.2 or CN, R.sup.7 is H or CH.sub.3, R.sup.8 is H, (C.sub.1 -C.sub.4) alkyl, (C.sub.3 -C.sub.4) alkenyl or (C.sub.3 -C.sub.4) alkynyl, each of the three latter radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, (C.sub.1 -C.sub.4) alkoxy, (C.sub.1 -C.sub.4) alkylthio, ((C.sub.1 -C.sub.4)alkyl)carbonyl and ((C.sub.1 -C.sub.4) alkoxy) carbonyl, R.sup.9 is (C.sub.1 -C.sub.4) alkyl, (C.sub.3 -C.sub.4) alkenyl, (C.sub.3 -C.sub.4) alkynyl, each of the three latter radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, (C.sub.1 -C.sub.4) alkoxy, (C.sub.1 -C.sub.4) alkylthio, ((C.sub.1 -C.sub.4)alkyl)carbonyl and ((C.sub.1 -C.sub.4) alkoxy)carbonyl, R.sup.10 and R.sup.11 independently of one another are H, (C.sub.1 -C.sub.4)alkyl, (C.sub.3 -C.sub.4) alkenyl or (C.sub.3 -C.sub.4)alkynyl, each of the three latter radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, (C.sub.1 -C.sub.4) alkoxy, (C.sub.1 -C.sub.4) alkylthio, ((C.sub.1 -C.sub.4) alkoxy)carbonyl, the radicals R.sup.12 together with the nitrogen atom are a heterocyclic ring having 5 or 6 ring members, which may contain further heteroatoms from the group consisting of N, O and S in the possible oxidation states and is unsubstituted or is substituted by (C.sub.1 -C.sub.4)alkyl or the oxo group, or is benzo-fused, R.sup.13 is H, (C.sub.1 -C.sub.4) alkyl, (C.sub.3 -C.sub.4) alkenyl or (C.sub.3 -C.sub.4) alkynyl, each of the three latter radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, (C.sub.1 -C.sub.4) alkoxy and (C.sub.1 -C.sub.4) alkylthio, A is a radical of the formula ##STR9## one of the radicals X and Y is hydrogen, halogen, (C.sub.1 -C.sub.3)alkyl or (C.sub.1 -C.sub.3) alkoxy, the two latter radicals being unsubstituted or being mono- or polysubstituted by halogen or monosubstituted by (C.sub.1 -C.sub.3)alkoxy, and the other of the radicals X and Y is hydrogen, (C.sub.1 -C.sub.3)alkyl, (C.sub.1 -C.sub.3)alkoxy or (C.sub.1 -C.sub.3)alkylthio, the three latter alkyl-containing radicals being unsubstituted or mono- or polysubstituted by halogen or mono- or disubstituted by (C.sub.1 -C.sub.3) alkoxy or (C.sub.1 -C.sub.3)alkylthio, or is a radical of the formula NR.sup.14 R.sup.15, (C.sub.3 -C.sub.6) cycloalkyl, (C.sub.2 -C.sub.4)alkenyl, (C.sub.2 -C.sub.4)alkynyl, (C.sub.3 -C.sub.4)alkenyloxy or (C.sub.3 -C.sub.4)alkynyoxy, Z is CH or N, R.sup.14 and R.sup.15 independently of one another are H, (C.sub.1 -C.sub.3)alkyl or (C.sub.3 -C.sub.4)alkenyl, X.sup.1 is CH.sub.3, OCH.sub.3, OC.sub.2 H.sub.5 or OCHF.sub.2, Y.sup.1 is --O-- or --CH.sub.2, X.sup.2 is CH.sub.3, C.sub.2 H.sub.5 or CH.sub.2 CF.sub.3, Y.sup.2 is OCH.sub.3, OC.sub.2 H.sub.5, SCH.sub.3, SCH.sub.2 CH.sub.3, CH.sub.3 or C.sub.2 H.sub.5, X.sup.3 is CH.sub.3 or OCH.sub.3, Y.sup.3 is H or CH.sub.3, X.sup.4 is CH.sub.3, OCH.sub.3, OC.sub.2 H.sub.5, CH.sub.2 OCH.sub.3 or Cl, Y.sup.4 is CH.sub.3, OCH.sub.3, OC.sub.2 H.sub.5 or Cl, and Y.sup.5 is CH.sub.3, C.sub.2 H.sub.5, OCH.sub.3 or Cl, MCPA, 2,4-D, bromoxynil, bentazone, fluthiacet, pyridate, diflufenopyr, carfentrazone, clopyralid, halosulfuron, thifensulfuron, prosulfuron, iodosulfuron, tritosulfuron, sulfosulfuron, 2,4-D, MCPA, bensulfuron, methsulfuron, acifluorfen, bispyribac, ethoxysulfuron, cinosulfuron, pyrazosulfuron, imazosulfuron, cyclosulfamuron, chlorsulfuron, bromobutide, bentazone, benfuresate, chlorimuron, diflufenican, flurtamone, tribenuron, amidosulfuron, mecoprop/mecoprop-p, dichlorprop/dichlorprop-P, fluroxypyr, picloram, loxynil, bifenoxy, pyraflufen-ethyl, fluoroglycofen-ethyl, cinidon-ethyl, picolinofen, glufosinate, glyphosate, imazapyr, imazethapyr, imazamethabenz, imazamethabenz-methyl, imazamox, imazaquin and imazapic.

9. A synergistic herbicide combination comprising a synergistic effective amount of

component (A) and component (B), wherein component (A) is selected from (A1) having the formula (A1) or their salts, ##STR11## in which R.^{sup.3} is H, (C.₁-C.₄alkyl, (C.₁-C.₄alkoxy, (C.₂-C.₄alkenoxy, (C.₁-C.₄alkynoxy, (C.₃-C.₆cycloalkyl, each of the 5 last-mentioned radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, cyano, (C.₁-C.₄alkoxy and (C.₁-C.₄alkylsulfonyl, and Me=methyl, and component (B) is selected from atrazine, metolachlor, bromoxynil, pyridate, iodosulfuron-methyl, glufosinate-ammonium and the monoammonium salt, nicosulfuron, rimsulfuron, halosulfuron, sulcotrione, glyphosate-isopropylammonium, primisulfuron, metribuzin, mesotrione, syanazine, dimethenamid, fluthiamide, metosulam, MCPA, alachlor, acetochlor, isoxachlortole, clopyralid, dicamba, imazethapyr, sethoxydim, diclofop/diclofop-P, fenoxaprop/fenoxaprop-P or its esters, ethoxysulfuron, anilofos, amidosulfuron, prosulfuron, dichlorprop, linuron, terbutylazine, fluroxypyr, 2,4-D, tribenuron, methsulfuron, thifensulfuron, imazamox, and carfentrazone.

11. The herbicide combination of claim 10, wherein component (A) is N-(N-4,6-Dimethyoxyprimidin-2-yl)aminocarbonyl)-2-(dimethylaminocarbonyl)-5-(formylamino)-benzenesulfonamide and component (B) is atrazine, metolachlor, bromoxynil, pyridate, iodosulfuron-methyl, glufosinate-ammonium and the monoammonium salt, nicosulfuron, rimsulfuron, halosulfuron, sulcotrione, glyphosate-isopropylammonium, primisulfuron, metribuzin, mesotrione, syanazine, dimethenamid, fluthiamide, metosulam, MCPA, alachlor, acetochlor, dicamba, diclofop/diclofop-P, fenoxaprop/fenoxaprop-P or its esters, ethoxysulfuron, anilofos, or amidosulfuron.